

## EQUIFREQUENT RADIO INTERFERENCE UNIT

### BACKGROUND OF THE INVENTION

5 The present invention relates to an interference unit, and more particularly to an equifrequent radio interference unit that continuously transmits carrier-free signals to prevent electric waves radiated from a transmitter for a first product from  
10 being received by a receiver on a second product, so that two or more radio-controlled products could be closely arranged in a common space to operate normally without being interfered with one another.

15 The prosperously developed electronic technologies have brought significant innovations to many appliances being used in our daily lives, leading us toward a radio world. For instance, micropower short-wave frequency-modulated digital radio has been  
20 employed in various household appliances that are usually closely arranged in a common space. For any two or more equifrequent remote-controlled wireless household appliances, such as two TV sets, two air conditioners, or the like of the same model, closely  
25 positioned in the same room, they would usually

interfere with one another. For example, when a user wants to turned on one of two closely positioned TV sets with a remote controller, both two TV sets would be turned on. Such problem of mutually interfered 5 household appliances could usually be solved by properly changing the positions of the appliances. However, the same problem is not so easily solved in the case of a business office. In a computerized office, arbitrary change of wireless keyboards and 10 mice might very possibly cause mutual interference of computer-controlled apparatus. In a worse condition, a failed computer system in the office and consequent serious losses might occur. This is why the wireless keyboards and mice are usually suitable for personal 15 computers at home but not in business offices.

Identification codes (ID codes) have been suggested to improve the problem of mutual interference. However, only limited number of ID codes is available. 20 The problem of mutual interference still exists when there are too many users and the available number of IC codes is not sufficient.

It is therefore tried by the inventor to develop an 25 equifrequent radio interference unit to eliminate the

problem of mutual interference among equifrequent radio-controlled products.

#### SUMMARY OF THE INVENTION

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A primary object of the present invention is to provide an equifrequent radio interference unit that is capable of continuously transmitting carrier-free signals to prevent electric waves radiated from a transmitter for a first product from being received by a receiver on a second product, so that two or more radio-controlled products could be closely arranged in a room to operate normally without being interfered with one another.

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To achieve the above and other objects, the equifrequent radio interference unit of the present invention includes a frequency-modulation circuit, a crystal-oscillating and frequency-adjusting circuit, a power-adjusting circuit, a power-output circuit, and a transmitting antenna. The interference unit of the present invention could be provided between any two adjacent equifrequent radio-controlled products to continuously transmit carrier-free signals to prevent electric waves radiated from the transmitter for the

first product from being received by the receiver on  
the second product. Therefore, all the equifrequent  
radio-controlled products closely arranged within a  
common space could operate normally without being  
5 interfered with one another.

#### BRIEF DESCRIPTION OF THE DRAWINGS

The structure and the technical means adopted by the  
10 present invention to achieve the above and other  
objects can be best understood by referring to the  
following detailed description of the preferred  
embodiments and the accompanying drawing, wherein  
15 Fig. 1 is a block diagram showing circuits and FM  
modulation of an equifrequent radio interference unit  
according to the present invention.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

20 Please refer to Fig. 1 that is a block diagram showing  
circuits and FM modulation of an equifrequent radio  
interference unit according to the present invention.  
As shown, the radio interference unit mainly includes  
25 a frequency-modulation circuit 1, a crystal

oscillating and frequency-adjusting circuit 2, a power-adjusting circuit 3, a power-output circuit 4, and a transmitting antenna 5.

5      The frequency-modulation circuit 1 modulates a radio frequency into a predetermined range and limits the crystal oscillating and frequency-adjusting circuit 2 to generate an oscillating frequency within the same predetermined range and to adjust and correct the  
10     oscillating frequency for the same to fall into a more accurate range of frequency. The power-adjusting circuit 3 determines an intensity of the oscillating frequency. Generally, a smaller power would have a shorter radiation distance; and a larger power would  
15     have a longer radiation distance. When the radio frequency has been adjusted to the desired power intensity, the power-output circuit 4 sends out an equifrequent carrier-free signal via the transmitting antenna 5.

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With the above-described arrangements, the interference unit of the present invention could be provided between any two adjacent equifrequent radio-controlled products to continuously transmit  
25     carrier-free signals. The interference unit

generally has a transmission power lower than that of  
transmitters for the radio-controlled products, so  
that signals transmitted from the transmitter of a  
radio-controlled product is not interfered by the  
5 interference unit and could be received and decoded  
by the receiver on the same radio-controlled product.  
When a carrier signal transmitted by the transmitter  
for a first radio-controlled product is radiated to  
a position beyond a reception range of the receiver  
10 on the same product, the carrier signal would become  
weaker before it arrives at a receiver on a second  
radio-controlled product due to its smaller power and  
shorter radiation distance. At this point, the power  
of the carrier-free signals radiated from the  
15 interference unit provided between the first and the  
second products would become larger than the  
attenuated power of the carrier signals from the  
transmitter for the first product. Due to being  
equifrequent, the carrier-free signals having larger  
20 power would supersede the carrier signals having  
smaller power. In this manner, the electric waves  
radiated from the transmitter for the first radio-  
controlled product are prevented from being received  
by the receiver on the second equifrequent radio-  
25 controlled product. Thus, two or more equifrequent

radio-controlled apparatus could be closely arranged within a common space to maintain normal operation without being interfered with one another.

5 The present invention has been described with a preferred embodiment thereof and it is understood that many changes and modifications in the described embodiment can be carried out without departing from the scope and the spirit of the invention that is  
10 intended to be limited only by the appended claims.